

**REMARKS**

In the Office Action, the Examiner objected to the drawings; rejected claims 15-26 and 34-39; and withdrew claims 1-14 from consideration. By this paper, Applicants hereby cancel claims 1-14 and 35 and amend claims 15, 26 and 34 for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. Upon entry of these amendments, claims 15-26, 34 and 36-39 remain pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

**Objection to the Drawings**

In the Office Action, the Examiner objected to the drawings under 37 C.F.R. § 1.83(a) stating that the drawings must show every feature of the invention specified in the claims. Specifically, the Examiner stated that “the *first, second, and third interfaces*, for example claim 15” must be shown or the feature(s) canceled from the claim(s).” Office Action, page 2 (emphasis in original).

Applicants traverse the objection. The “first interface,” “second interface,” and “third interface” recited in claim 15 are illustrated in the drawings. More particularly, page 8, lines 12-23 of the specification recites the following:

Turning now to FIG. 3, it can be seen that each of the interstitial circuit boards 30 and 32 has a plurality of layers L<sub>1</sub>-L<sub>n</sub>. On the top side of each interstitial circuit board 30,32 is a spaced array of *metal connection pads* 36, and on the bottom side of each interstitial circuit board 30,32 is a spaced ball grill array (BGA) of *solder balls* 38. The bottom sides of the integrated circuit devices 26 and 28 have ball grid arrays of solder balls 40 which are fused to the *underlying metal connection pads* 36, and the *solder balls* 38 on the bottom sides of the interstitial circuit boards 30 and 32 are fused to underlying series of *metal*

*connection pads 42 disposed on the top side 20a of the system board 20.* (Emphasis added.)

Accordingly, as clearly shown in Figure 3, embodiments of the “first interface,” “second interface,” and “third interface” may be represented by the metal connection pads 42, the solder balls 38, and the metal connection pads 36, respectively. For this reason among others, Applicants request withdrawal of this objection.

**Claim Rejections under 35 U.S.C. § 112, Second Paragraph**

The Examiner rejected claims 15 and 35 under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Although Applicants believe that claim 15, as originally presented, is sufficiently clear and definite, Applicants hereby amend claim 15 in the interest of clarification. Specifically, Applicants amend claim 15 to recite “a first set of traces free of termination components.” Accordingly, Applicants respectfully request withdrawal of the Examiner’s rejection under 35 U.S.C. § 112, second paragraph.

**Claim Rejections under 35 U.S.C. § 103(a)**

The Examiner rejected claims 15-26 and 34-39 under 35 U.S.C. § 103(a) as being unpatentable over Begis (U.S. Patent No. 5,610,801, hereinafter “the Begis reference”) in view of Klaser (U.S. Patent No. 4,870,746, hereinafter “the Klaser reference”).

***Legal Precedent***

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). The mere fact that references can be combined or modified

does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d. 1430 (Fed. Cir. 1990). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

***Claim Features Omitted from Begis and Klaser References***

Turning to the claims, the present independent claim 15 recites, *inter alia*, “a circuit board, comprising: a first set of traces free of termination components.<sup>1</sup>” Similarly, the present independent claim 26 recites, *inter alia*, “a first circuit board comprising first traces free of termination components,” and the present independent claim 34 recites, *inter alia*, a “circuit board comprising: a plurality of traces . . . free of termination components.<sup>2</sup>”

The cited references, taken alone or in hypothetical combination, fail to teach or suggest traces free of termination components, as recited by independent claims 15, 26 and 34. In fact, the Examiner did not even consider the foregoing claim language. The Examiner stated “[b]y applying art, examiner assumes the limitation would be read as ‘a first set of traces or traces’” without consideration of the “free of termination components” language as recited in the claims. Office Action, page 4. The Begis reference does not disclose that the motherboard 12 includes routing lines free of termination components. The Begis reference discloses a motherboard 12 to which a plurality of integrated circuit packages 14 can be mounted. Begis, col. 2, lines 19-26. The motherboard 12 includes a plurality of routing lines that provide signals to the integrated circuit packages 14. *Id.* The Begis reference, however, does not disclose that the routing lines on the motherboard 12 are “free of termination components.” Therefore, the Begis reference does not teach or suggest traces free of termination

components. Moreover, the Klaser reference fails to obviate the deficiencies of the Begis reference. Instead, the Klaser reference discloses “multilayer printed circuit boards which have resistors printed on one or more of the board’s intermediate layers.” Klaser, col. 1, lines 8-10. In view of these deficiencies among others, the cited references, taken alone or in hypothetical combination, cannot render obvious the current independent claims 15, 26, and 34 and their dependent claims.

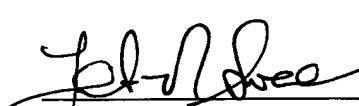
For these reasons among others, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103.

**Conclusion**

Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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